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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,531	12/04/2006	Robert D. Goldbach	23074-004US1	6965

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EXAMINER	
WRIGHT, MADISON L	

ART UNIT	PAPER NUMBER
3781	

NOTIFICATION DATE	DELIVERY MODE
07/20/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	10/598,531	GOLDBACH ET AL.	
	Examiner	Art Unit	
	Madison L. Wright	3781	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8 and 12-20* is/are rejected.

7)☒ Claim(s) *3 and 9-11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 September 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/09/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the interlocked complementary angled ramp surfaces are slidably engaged in a manner which **permits** movement of the second member relative to the first member in the cross-ramp direction and the surrounding support structure including a horizontally extending top support structure above the top of the tank must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the

examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **101** as seen in Fig. 9. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-11, 13, 17, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 1 recites the limitations "the surrounding support structure", "the tank wall or top" and "the axis" in lines 3, 4, and 6 of claim 1. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 2 recites the limitation "the cross-ramp direction" in the line 3 of claim 2. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 3 recites the limitation "the cross-ramp direction" in the line 3 of claim 3. There is insufficient antecedent basis for this limitation in the claim.

8. Claim 4 recites the limitation "the wall or top" in line 2 of claim 4. There is insufficient antecedent basis for this limitation in the claim.

9. Claim 5 recites the limitation "said load bearing insulation" in the first line of claim 5. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 6 recites the limitations "said load bearing insulation" and "the shape" in lines 1-2 of claim 6. There is insufficient antecedent basis for this limitation in the claim.

11. Claim 7 recites the limitation "the tank" in the second line of claim 7. There is insufficient antecedent basis for this limitation in the claim.

12. Claim 8 recites the limitations "the tank", "the outer surface", "the wall", "the plane", and "the ramp direction" in lines 3, 4, 8, and 9 of claim 8. There is insufficient antecedent basis for this limitation in the claim.

13. Claim 9 recites the limitations "the tank", "the outer surface", "the wall", "the plane", and "the ramp direction" in lines 3, 4, and 9 of claim 9. There is insufficient antecedent basis for this limitation in the claim.

14. Claim 10 is indefinite because the definition in the specification says that a "center of thermal fixity" is a point of rigid attachment and claim 10 says "the walls each have one point of thermal fixity having no rigid attachment". Also, Claim 10 recites the limitations "the walls" and "the tank wall" in lines 1-2 of claim 10. There is insufficient antecedent basis for this limitation in the claim.

15. Claim 11 recites the limitation "the outer surfaces" in line 3 of claim 11. There is insufficient antecedent basis for this limitation in the claim.

16. Claim 13 recites the limitation "the walls" in line 2 of claim 13. There is insufficient antecedent basis for this limitation in the claim.

17. Claim 17 recites the limitations "the surface" and "the point of rigid attachment" in lines 4 and 7 of claim 17. There is insufficient antecedent basis for this limitation in the claim.

18. Claim 19 recites the limitation "the tank" in lines 2-3 of claim 19. There is insufficient antecedent basis for this limitation in the claim.

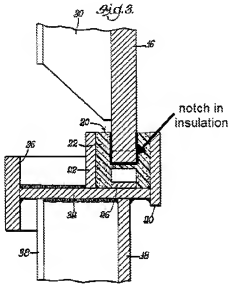
Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20. Claims 1, 2, 4, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,111,146 to Babcock et al. ("Babcock").

This figure, now referred to as Babcock annotated Fig. 3, used for the rejection of claim 6 has been replicated below, and the Examiner has added reference points for ease of explanation, and said reference points will be used for the rejection of claim 6 below.



As to claim 1, Babcock teaches a support assembly for attaching a wall or top of a semi-membrane tank to a surrounding support structure, said assembly comprising a first member (dovetail lugs 46) fixedly attachable to the surrounding support structure, and a second member (dovetail lugs 44) fixedly attachable to the tank wall or top (Fig. 2), wherein the first and second members include interlocked complementary angled ramp surfaces (side surfaces 45) slidably engaged in a manner which permits movement of the second member relative to the first member in a direction parallel to the axis of the ramping surfaces and

prevents movement of the second member relative to the first member in a direction perpendicular to the ramping surfaces (col. 3, lines 62-65).

As to claim 2, Babcock teaches the support assembly according to claim 1 wherein the interlocked complementary angled ramp surfaces are slidingly engaged in a manner which prevents movement of the second member relative to the first member in the cross-ramp direction (col. 3, lines 62-65).

As to claim 4, Babcock teaches the support assembly according to claim 1 wherein the second member (dovetail lugs 44) is rigidly attachable to the wall or top through load bearing insulation (hardenable material 22).

As to claim 6, Babcock teaches the support assembly according to claim 4 wherein said load bearing insulation (hardenable material 22) includes a notch (notch, Babcock annotated Fig. 3) conforming to the shape of a securing structure projecting outwardly from the tank wall or top (Fig. 3).

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

22. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babcock in view of U.S. Patent No. 4,156,492 to Cavanna et al. ("Cavanna").

As to claim 5, Babcock teaches the support assembly according to claim 4, but does not teach wherein said load bearing insulation is a block comprising two pieces securable to one another.

Cavanna teaches a first support 56, a second support 62, and a third support 66 that connect an inner vessel 16 to an outer vessel 14. Cavanna also teaches insulation blocks 72, 74, and 76 where blocks 72 and 76 are securable to each other as seen in Fig. 4 to provide additional insulation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the insulation blocks of Cavanna with the support as taught by Babcock to provide additional insulation (Cavanna, col. 4, lines 46-49).

As to claim 7, Babcock teaches the support assembly according to claim 1 but does not teach wherein the second member is adapted to secure insulation panels to the tank.

Cavanna teaches a first support 56, a second support 62, and a third support 66 that connect an inner vessel 16 to an outer vessel 14. Cavanna also teaches insulation blocks 72, 74, and 76 where blocks 72 and 76 are securable to each other and the second support can hold insulation block 74 to the tank as seen in Fig. 4 to provide additional insulation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the second support hold the insulation block of Cavanna with the support as taught by Babcock to provide additional insulation (Cavanna, col. 4, lines 46-49).

23. Claims 8 and 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babcock in view of U.S. Patent No. 6,626,319 B2 to Miller et al. ("Miller").

As to claim 8, Babcock teaches a support system for planar walls of a semi-membrane tank, including a plurality of support assemblies according to claim 2, but does not teach said support system providing at least one point of thermal fixity for each wall, comprising a vertically extending support structure surrounding the tank and an array of support assemblies spaced over the outer surface of each wall connecting the wall to the surrounding support structure, said array including a plurality of support assemblies according to claim 2 spaced horizontally from the at least one point of thermal fixity and oriented horizontally with their second members ramping away from said at least one point, thereby providing vertical support for each wall and permitting the second members to move perpendicularly to the plane of the wall and horizontally in the ramp direction parallel to the plane of the wall.

Miller teaches a tank 10 made up of sections 12, 14, and 20 that are connected by weld lines 28 where the tank is supported by connecting the load-bearing insulating support blocks 34 to the carriage 40 using the channel member 58 that is attached to the vertical beam member 46. The horizontal beam member 48 and the vertical beam member create the grid of the carriage. Miller also teaches a tank dome 78 that is a point of thermal fixity because it is where the dome penetrates the tank. The support blocks move perpendicularly

to the plane of the wall after the support blocks are horizontally moved out of the channel member.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the carriage, the support blocks attached to the tank, and the tank dome of Miller with the support as taught by Babcock to support the tank during construction and installation (Miller, col. 2, lines 21-28).

As to claim 12, Babcock modified by Miller teaches the support system according to claim 8 wherein the support assemblies according to claim 1 are disposed such that their second members ramp away from a line extending vertically through the at least one point of thermal fixity, as taught by Miller. Miller teaches a tank dome 78 that is a point of thermal fixity because it is where the dome penetrates the tank and the support members ramp away from the middle of the tank.

As to claim 13, Babcock modified by Miller teaches the support system according to claim 8 wherein the support assemblies are rigidly attachable to the walls through load-bearing insulation, as taught by Miller. Miller teaches stiffening bars 30 that are affixed to the tank along weld lines that attach to the support blocks 34 for supporting the tank (Miller, col. 3, lines 6-12).

As to claim 14, Babcock modified by Miller teaches the support system according to claim 8 wherein said walls are of curved-plate construction with horizontally extending cusps between curved-plates, said array consisting of support assemblies according to claim 2 arranged along said cusps, as taught by

Miller. Miller teaches that the sections are made of arc-shaped segments that have weld lines 28 at the cusps (Fig. 4).

As to claim 15, Babcock modified by Miller teaches the support system according to claim 14 wherein the support assemblies are arranged so as to form vertical columns of support assemblies, as taught by Miller. Miller teaches the support blocks that are vertically arranged as seen in Fig. 1.

As to claim 16, Babcock modified by Miller teaches the support system according to claim 15 further comprising vertically oriented structural beams, each beam being fixedly attached to the second member of at least two support assemblies in a vertical column of support assemblies, as taught by Miller. Miller teaches a tank 10 made up of sections 12, 14, and 20 that are connected by weld lines 28 where the tank is supported by connecting the load-bearing insulating support blocks 34 to the carriage 40 using the channel member 58 that is attached to the vertical beam member 46.

As to claim 17, Babcock modified by Miller teaches the support system according to claim 8 wherein the tank includes a top and the surrounding support structure includes a horizontally extending top support structure above the top of the tank, further comprising an array of support assemblies according to claim 1 spaced radially over the surface of the top and providing a point of thermal fixity, said support assemblies having first members rigidly attached to the surrounding support structure and having second members attached to the top with ramping surfaces oriented radially away from the point of rigid attachment, as taught by

Miller. Miller teaches a tank dome 78 that is a point of thermal fixity because it is where the dome penetrates the tank. Miller shows in Fig. 1 that the support blocks are on the top of the tank and attach to the top of carriage. The support blocks move away from the tank dome. In as much as the applicant has shown, Miller teaches the top of the tank and the horizontally extending top support structure above the top of the tank.

As to claim 18, Babcock modified by Miller teaches the support system according to claim 17 wherein the second members are rigidly attached to the top through load-bearing insulation, as taught by Miller. Miller teaches stiffening bars 30 that are affixed to the tank along weld lines that attach to the support blocks 34 for supporting the tank (Miller, col. 3, lines 6-12).

As to claim 19, Babcock modified by Miller teaches the support system according to claim 8 wherein the tank includes a top and the surrounding support structure includes a horizontally extending top support structure above the top of the tank, further comprising a rigid attachment rigidly securing a point of said top to said top support structure, and support assemblies according to claim 1 arrayed in a grid pattern across the top, as taught by Miller. Miller teaches a tank dome 78 that is a point of thermal fixity because it is where the dome penetrates the tank. Miller shows in Fig. 1 that the support blocks are on the top of the tank and attach to the top of carriage. The support blocks move away from the tank dome. In as much as the applicant has shown, Miller teaches the top of the tank and the horizontally extending top support structure above the top of the tank.

As to claim 20, Babcock modified by Miller teaches the support system according to claim 8 further including vertical keys and engageable keyways attached to two or more parallel side walls and their respective surrounding support structure, as taught by Miller. Miller teaches a tank 10 made up of sections 12, 14, and 20 that are connected by weld lines 28 where the tank is supported by connecting the load-bearing insulating support blocks 34 to the carriage 40 using the channel member 58 that is attached to the vertical beam member 46.

Allowable Subject Matter

24. Claims 3 and 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

25. Applicant is duly reminded that a complete response must satisfy the requirements of 37 C.F. R. 1.111, including: "The reply must present arguments pointing out the specific distinctions believed to render the claims, including any newly presented claims, patentable over any applied references. A general allegation that the claims "define a patentable invention" without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section. Moreover, "The prompt development of a clear Issue requires that the replies of the applicant meet the objections to and rejections of the claims." Applicant should also specifically point out the support for any amendments

made to the disclosure. See MPEP 2163.06 and MPEP 714.02. The "disclosure" includes the claims, the specification and the drawings.

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- U.S. Patent No. 6,971,537 B2 to Enright, Jr. discloses a support arrangement for semi-membrane tank walls.
- U.S. Patent No. 5,727,492 to Cuneo et al. discloses a liquefied natural gas tank and containment system where the tank is made up of a series of curved sections that abut along cusps.
- U.S. Patent No. 3,425,583 to Bridges discloses a keying arrangement for liquefied gas storage tanks that have members attached to the tank wall and members attached to the support structure where the members have parts forming a key and keyway configuration.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Madison L. Wright whose telephone number is 571-270-7427. The examiner can normally be reached on Monday thru Friday, 8:00 to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Stashick can be reached on 571-272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anthony D Stashick/
Supervisory Patent Examiner, Art Unit 3781

/M. L. W./
Examiner, Art Unit 3781